Field Test for 61-310, 61-312, 61-340 and 61-342

Most meters function in the same way. They take an electrical or physical measurement and convert it to a small electrical voltage or current to be interpreted via an Analog to digital converter and then to some kind of output device like a display or interface.

So let's do a quick test of the meter.

Before beginning, replace the battery and install the test leads of the Unit Under Test {UUT}

Since most meters convert inputs to a DC voltage for the Analog to Digital converter a DC Voltage test should be done first.

Turn the meter to DC Volts (V⎓), if you have a manual ranging unit select the proper range

As an example on the IDEAL 61-310 Select the 20 V DC range.

- Measuring a new 9V battery. The unit should read 9.2 to 9.9 Volts.

Turn the meter to AC Volts (V~), if you have a manual range meter select 200 or greater range

- Measure an AC outlet. The unit should read between 108 and 132 Volts.

Turn the meter to Ohms. (Ω). If you have a manual range meter select the lowest Ohms range. On the Ideal 61-310 this would be the 200 range

- Short the Test leads together. The meter should read between 0 and no more that 5 counts.
    i. Example 0.3
- If the meter does not read properly check the Leads.
- If the ohms function is protected via a fuse like the 61-310 series or the 61-340 series Check the Fuse.

If all three tests are working, you have tested about 80% of the base functions of the meter.

Now lets look at Temperture.

Most meters use a K type Thermocouple {TC} which is made of 2 Dissimilar metals bonded at one end. When 2 dissimilar metals are bonded together they cause a small electrical charge that is proportional to the environmental temperature.

It is easy to check a TC by using the ohms Function.

- Place the meter into the ohms funtion and measure the imdepance of the probe.
- You should expect some impedance due to the small electrical charge caused by the 2 dissimilar metals. The reading should change as you heat or cool the TC
- If the meter reads open then the TC should be replaced or repaired.

To Check the TC function select the C or F function

- Us the test leads and short them together.
- If you see a temperature reading, the meter is working OK if you are getting an Open {OL or "1.___ "} display, the input protection or the meter is at fault.
- Most meters TC function is protected by a Fuse.
- Check the input protection Fuse.